



**Department of Mathematics, Statistics and Computer
Science**

St. Francis Xavier University

Presents

**Reliability Aware System-Wide Energy Management
in Real-Time Systems**

by

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Monday, January 12th, 2009 @ 2:15 in AX23A

Power management and reliability are two important factors during the design of real-time systems. The goal of the thesis is to design real-time scheduling algorithms to save power consumption and to guarantee the reliability of the underlying real-time systems simultaneously.

First of all, power management issue of real-time systems will be addressed. With the size of modern processors getting smaller and smaller, leakage power (static power consumption) becomes a big component in the total power consumption. Therefore, by taking both static and dynamic power consumption into consideration, we have proposed a new dynamic leakage aware algorithm which integrates dynamic slack-reclaim technology with power shutdown and procrastination method. The previous works and techniques on leakage power aware scheduling will be introduced as well.

Secondly, we will examine the reliability issue. It has been shown in the literature that the reliability of the systems is significantly reduced when slowing down the processor. Therefore, how to balance the power management and reliability becomes a challenging and important problem. Some preliminary study on balancing reliability and dynamic power management will be described.

Finally, the future plans for the thesis work will be presented as well.

Refreshments will be served before the talk in AX24A